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ORIGINAL ARTICLES.

SOME EYE AFFECTIONS AND SALVARSAN.*

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In view of the many serious affections of the cranial nerves following the use of atoxyl and other arsenic compounds the employment of salvarsan has been watched with keen interest. Relative to the number of cases treated with this remedy such complications have been very few. The cause of these manifestations is now a question of decided importance. Ehrlich insists that the occurrence of neuritis bears no relation to the injection of his remedy. In this he is upheld by many close observers. On the other hand Finger, Alexander, Stern and others believe that cranial nerve troubles are more frequent since the introduction of salvarsan.

Finger, (*Wien. Klin. Wchnschr.*, 1910, 47) who, from his Vienna clinic, has reported several cases of ocular and auditory disturbances following the injection of salvarsan, believes the trouble to be luetic but in some way excited by the drug.

Stern (*Deutsch. Med. Wchnschr.*, Jan. 5, 1911) thinks that the remedy is directly responsible and cites three cases of oculomotor paralyses in which the patients had negative Wassermann reactions. In one of these cases salvarsan was employed at the patient's request, there being no manifestations of syphilis. However, mercury had previously been used. The Wassermann reaction remained negative. Schomberg (*Jour. A. M. A.*, May

*These cases were observed at the Barnard Free Skin and Cancer Hospital, formerly St. Louis Skin and Cancer Hospital.

20, 1911) believes that many neuritic complications following the injection of salvarsan are simply due to the cessation of all other treatment, a single injection of the remedy not effecting a complete cure. This opinion is borne out by the fact that many of such cases have subsided after a second injection, or the use of mercury. This writer further points out that these untoward effects have been noted almost exclusively after the injection of small doses. And that when it has been used in the most active manner, that is intravenously, in no reported case have there been observed such neuritic complications. In this connection it is interesting to note that syphilitic manifestations are much more common in the cranial nerves, vessels and meninges than in like structures of the spinal cord; also such manifestations following the use of salvarsan have favored the cranial region. It is an undisputed fact that cases of cranial nerve inflammation have appeared from time to time in cases of untreated syphilis and those vigorously treated with mercury and iodid. There can be no doubt but that since the introduction of Ehrlich's remedy these cases have been watched much more carefully; and, due to the prevalent interest, have been promptly reported, whereas in the past many such experiences, under the former treatment, have gone unrecorded. A percentage compilation of such cases is manifestly impossible and we are at a loss to compare their frequency with the number of those arising after the use of salvarsan.

Now that we have come less to fear its use, this drug is being more frequently employed in ocular syphilis. The experiences so far have given rise to somewhat conflicting reports. It seems to have been found most effective in luetic lesions of the lid and sclera, less so in the uveal tract and least so in the cornea, optic nerve and ocular muscles. As a whole the results in the treatment of ocular syphilis with salvarsan have not been so satisfactory as in general syphilis.

The following is a report of the eye findings in 108 patients who have received one or more injections of salvarsan. The observations of the general syphilitic condition were made by Drs. Engman and Mook. The Wassermann tests were made by Dr. Buhman.

The vision and fields for form and color were taken and ophthalmoscopic examinations made before and following the injections. The examinations have been repeated at varying intervals. The first injections were given nine months ago.

Six weeks ago about one-fourth of the patients reported for examination for the last time. With the exception of one case the eyes which were found free from lues previous to the administration of the drug have presented no complications. Three cases of ocular lues were treated with salvarsan.

Case 1.—Admitted to the hospital on January 14, 1911. Male, age 36 years. Was infected two years ago. Now presents tubercular ulcerations of ear and nose. History of iritis in right eye one year ago, no evidence of previous trouble. V=20/15, R. and L. Media and fundi are normal. Given injection of mercury with very little improvement following. On January 24th patient received an intramuscular injection of 0.6 gm. of salvarsan. February 1st Wassermann reaction three plus. February 14th, three weeks after the injection of salvarsan, patient developed a low grade of iritis in the right eye. O.D. V=20/30, O.S. V=20/15 (now receiving mercury and pot. iodid). March 9th iritis had almost subsided, Wassermann reaction remained three plus. Given 0.18 gm. salvarsan intravenously with no appreciable reaction. March 20 eye is well. V=20/15 R. and L. General condition is much improved. Continues to receive mercury and pot. iodid. Wassermann reaction remained three plus. April 1st, discharged. No further ocular trouble.

Case 2.—Admitted March 22, 1911. Female, age 20 years. Has typical maculo-papular lesions all over body. Beginning iritis in right eye. O.D. V=15/30, O.S. V=15/10. Treatment deferred until iritis has further developed. March 27th, O.D. V=15/96, O.S. V=15/10. Circumcorneal injection increased. Pupil responds fairly well to atropine. March 29th, Wassermann reaction is four plus. O.D. V=15/120, O.S. V=15/10. Iritis marked. March 30, received an intravenous injection of 0.55 gm. salvarsan. The iritis began improving during the next 24 hours and three days later had entirely abated. V=15/10 R. and L. Media and fundi normal. Although there was improvement, the skin lesions faded slowly. Three days after the injection there seemed to be a complete cessation of improvement in these lesions. A second injection of 0.6 gm. was now given intramuscularly and for a few days the lesions faded rapidly. Eventually it became necessary to employ mercury. The Wassermann reaction remained four plus until May 15th, when it was three plus.

Case 3.—Admitted March 3, 1911. Female, age 43 years. Has tertiary lues which shows a destructive process on fore-

head. V=15/75 R. and L. Marked neuro-retinitis in each eye. Old retino-choroidal atrophic spots in right eye. Seen also by Dr. Ewing. March 8th, Wassermann reaction found to be four plus. March 18th, intravenous injection of 0.3 gm. of salvarsan. There was very little improvement in the skin lesions and mercury and pot. iodid were resorted to. No improvement in the eye conditions could be detected up till May 1st, when the patient insisted upon leaving. The lesions on the forehead were completely healed.

Case 4.—Male, age 9 years. On April 15, 1911, a diagnosis of cerebral lues made. Vision 20/24 R. and L. Right pupil 4.5 mm. in diameter, left 3 mm. Both pupils react well to light. Disk margin of right eye slightly blurred. Movements of globes good. Given mercurial inunctions. April 29th, V. 20/48 R. and L. Disks swollen. There has now developed a paresis of the right external rectus. May 8, general condition improved. Disks more swollen. May 25th, disks are now measured by +7D, surrounding fundus by +2.D. Esotropia increased. Pupils react well to light. O.D. V=10/120, O. S. V=20/150. May 30th, Wassermann negative. June 9th, received 0.25 gm. salvarsan intravenously. Three days later vision is 20/96 R. and L. Disks less swollen. July 15th, general condition decidedly improved. O.D. V=20/48, O.S. V= 20/38. Pupils unequal, but respond readily to light. Esotropia much less marked. Disks are now measured by +4D. For the past five days mercury has been used.

The latter case was observed at the St. Louis Children's Hospital. The general condition was noted by Drs. Hurford and T. C. Hempelmann.

Thus in one case of neuritis salvarsan was of no avail, while in another excellent improvement followed its injection. However, the most charming result was obtained in the case of iritis which, then in a most active state, completely subsided within 72 hours after the injection. The case of iritis which developed after the use of salvarsan I believe to have been a simple syphilitic outbreak entirely independent of this drug.

EXPERIENCES WITH SALVARSAN IN SYPHILITIC EYE AFFECTIONS, FROM THE LITERATURE AND FROM HIS OWN CASES.*

By Dr. O. Stuelp.

(Translated by A. Alt, M.D.)

Thus far the experiences gained by about 40,000 injections as to the value of the Ehrlich-Hata praeparation have been laid down in about 250 original papers and in an almost equal number of lectures and discussions. All phases from the quickest, most astonishing cures of the most varied luetic manifestations to total failures, even after several injections, have been noted. Relapses, even increase in the symptoms have been reported. Voices have been heard which declare, especially as concerns the results of the Wassermann reaction, that the effect of the treatment of syphilis with arsenobenzol was not in the least more prompt and even less lasting than that of the former methods of treatment. The parasitropic action was especially doubted on account of the particularly good effect in the tertiary forms of lues in which spirochaetæ are usually not numerous and since numerous living parasites could still be found in the papules 2 months after the injection (Fraenkel and Grouwen).

We cannot decide whether the cause for the relapses and failures lies in insufficient dosage or in the resistance to arsenium of certain forms of spirochaete or in the lack of blood supply of greatly infiltrated syphilides. The hoped for sterilisatio magna is not realized at present.

According to a résumé by Plant on the therapeutic effect of arsenobenzol in *general* syphilis, it is prompt and acts favorably in 77 per cent., without effect in 23 per cent.; this means results which are scarcely superior to an energetic treatment with mercury and potassium iodid.

After the fear of using arsenobenzol with affections of the visual organ, which was perfectly justified in view of the numerous amauroses following the exhibition of atoxyl, arsacetin and similar praeparations, the treatment of luetic eye affections was begun with the new remedy, and since it is now a question before every one of us whether to employ the commercial salvarsan, it seems timely to give a comprehensive résumé and to find out: (1) What has this remedy thus far done in eye affections and which at this time are the indications for its use by oculists?

*Klin. Monatsbl. f. Augenhlk., March, 1911.

(2) What additional effects must we eventually expect to meet? (3) What contraindications have been found? (4) Which is the most appropriate form of giving in a given case?

I. An exact résumé of all cases under observation is impossible, since partly the number of cases is not given, partly there is nothing said relative to the time of observation and the effect, and sometimes the period of observation was not yet finished.

Concerning a further number of observations only general remarks have been made. According to Sieskind, for instance, "parenchymatous keratitis seems to be less favorably influenced." According to Werther and others "it remains unchanged"; according to Wolters "it shows an undeniable tendency to healing, but does not reach a perfect cure, because it is often complicated by tuberculosis."

Wechselbaum states that "even with abnormal optic nerves, salvarsan did not damage the sight; in optic atrophy it is generally unsuccessful; in episcleritis and iritis its effect was very favorable" (Wechselbaum and Seligsohn); "in several cases of choroiditis syphilitica absorption of the foci, considerable clearing of the vitreous opacity and improvement in vision resulted." Ehrlich speaks "of the favorable action in luetic retinitis and gummous iritis." Weintrand and Werther report "that cases of iritis with vitreous opacities were favorably influenced." v. Grosz "expects no effect in tabetic atrophy of the optic nerve," but "does not consider it as a contraindication." Treupel reports "that paralyses of the ocular muscles and choked disc disappeared in a few days;" similar reports come from Rieke and Galewski. Deutschmann says: "In cases of white atrophy in which mercury and iodid are useless or even act badly, arsenobenzol is in place." Seligsohn never saw the lost pupillary reflex return and found no improvement in eye muscle paralyses. Fleming could not find a decided effect in 68 cases, a cure in the rarest cases only; his results were very poor in parenchymatous keratitis, better in iritis and optic neuritis; no effect was visible in endarteriitis retinæ, choroiditis, atrophy of the optic nerve and paralysis of ocular muscles. Wibo reports similarly.

In many other cases, mostly published by men who are not oculists, the results are valueless for an absolutely accurate judgment; others may be made use of in statistics.

It is not impossible that in the mass of literature I have overlooked a case or, perhaps, counted one twice. On the whole, however, I have been able up to February, 1911, to collect 470 eye cases with the following result:

A. Eyelids. Of 4 cases of gumma 2 cured in 10 days; 2 rapidly improved.

B. Conjunctiva. Of 4 cases of primary sore rapid cure in 3, no result in 1 case. Of 3 cases of pemphigus lueticus (xerosis) astonishing improvement in 1; no effect even after repeated injections in 2. In 1 case of tertiary conjunctival ulcus, satisfactory improvement.

C. Cornea. In 2 cases of keratoiritis luetica slow improvement in 1 (but relapse 3 months after); no effect in 1. In 2 cases of keratitis parenchymatosa (lues acquisita) excellent success.

In 111 cases of keratitis parenchymatosa from hereditary lues quick cure 3 times; considerable improvement 4 times; rapid beginning of clearing up (after two or three days) 6 times; favorable influence 16 times; rapid disappearance of injection and photophobia, but no material clearing up 6 times; improvement following only after a second injection twice; first improvement, then relapse or affection of the fellow eye 5 times; no result, even after two and three injections 69 times.

D. Sclera. In 5 cases of scleritis luetica, gumma and iridoscleritis a cure in 3 to 6 days, 3 times; favorable result once, at first a favorable result, relapse 4 weeks after once.

E. Uveal Tract. Of 99 cases of iritis plastica and papulosa, iridocyclitis, iridochoroiditis and chorioretinitis, a rapid cure in from 4 to 12 days occurred 32 times; a favorable influence was observed 30 times; a cure after a second injection once; at first quick or moderate improvement, then a standstill or relapse or affection of the fellow eye, 13 times; no effect, a few times; bad effect, 23 times.

F. Retina and Opticus. 1 case of gumma of the retina cured. Out of 60 cases of neuritis optica (choked disc) and neuroretinitis 33 resulted in a rapid cure (4 to 14 days); great improvement in two to five weeks, 15 times; at first improvement, then relapse, 3 times; no effect, event after a second injection, 9 times. Of 24 cases of atrophy of the optic nerve (tabes, paralysis, pseudotabes and meningitis) a doubtful slight improvement was seen 6 times; no result, but usually also no deterioration, 18 times.

G. Ocular Muscles. Out of 146 cases of difference in the size of the pupils, immoveable pupils, paralysis of internal or external ocular muscles in cerebral lues, tabes and paralysis, also pseudotabes and pseudoparalysis a prompt cure resulted (in 2 to

8 days) 18 times; favorable influence 21 times; cure after a second or third injection 3 times; at first improvement then relapse 7 times; no effect, even after repeated injections, 97 times (among these 55 cases of tabes and paralysis!).

H. Orbit. 4 cases of exophthalmos (1 of total ophthalmoplegia) with lues of the ethmoid bone, of gumma and periostitis orbitæ were rapidly cured (7 to 14 days). 3 cases of most agonizing neuralgia of the fifth nerve in tabes were, also, promptly cured.

Astonishing was one case of sympathetic ophthalmia with an excellent result in 3 days; V. increased from 0.15 to 0.9! (Iadassohn, Sigrist; the latter author considers sympathetic ophthalmia due to a spirillum-like parasite).

I should like to report on the effect of salvarsan in 4 cases of eye affection and 1 case of (luetic?) albuminuria from my own observations.

1. M. B., 25 years old. Primary effect early in 1910. Roseola. April left eye luetic iritis. Wassermann positive. Mercury at first effectual. Middle of June relapse. Wassermann positive. Seven injections of gray oil, severest stomatitis mercurialis. Albumen ½ per cent., no cylinders. Since the albuminuria did not improve and since it was thought to be, perhaps, luetic, injection of salvarsan. Slight local and general reaction. Albumen was raised to 1¼ per cent. then decreased and has remained between ½ and 1 per cent. up to date. Eyes normal.

Result=0.

2. M. S., 18 years old, mentally and bodily underdeveloped, highly anæmic, hereditary luetic girl with much headache and lassitude, was received at the hospital on account of relapsing blepharitis, conjunctivitis and keratitis scrophulosa (or luetica). Tests positive, both tuberculin and Wassermann. Tuberculin cure useless. Injection of salvarsan. Slight local and general reaction; subjective feelings improved; girl looks better, has an appetite, the blepharitis and keratitis are much improved without local applications.

Result, subjectively and objectively moderate.

3. B. J., 25 years old. Primary sore with subsequent roseola and frequently relapsing plaques of the mucous membrane of mouth and throat, several mercurial cures elsewhere. Admitted February, 1910. Neuritis optica and central chorio-retinitis, central scotomata, both eyes. V=5/12. Plaques in mouth, papule on penis. Energetic inunctions and iodid, electric light

baths with good success. V. normal. 3 weeks later relapse of plaques; inunctions, Zittmann. In spite of this 9 weeks later severe relapse of the optic neuritis, V. falls to 3/10. September 1st, injection of salvarsan into the glutaeus. Severe local suffering. Eyes at first worse, then astonishing improvement within 4 weeks. V. normal, no color scotomata.

10 weeks later, that is 14 weeks after the salvarsan injection, at another place severe relapse of plaques and optic neuritis. V= 1/3. Visual field contracted, central color scotomata.

Result, at first good, but soon relapses.

4. Mrs. C. M., 50 years old. Infected 25 years previously (husband died of paralysis), comes under treatment beginning of 1909. R. blind from old neuro-retino-choroiditis. L. the same affection of more recent date. V=6/24. Mercury and iodid help to retain vision. July, 1910, severe relapse with iridocyclitic symptoms. V. 12/200. Renewed inunctions, iodid, electric light baths; marked improvement. V=5/10 to 5/8. In October relapse. Wassermann positive. After 3 injections of gray oil severest mercurial stomatitis. After its disappearance, as before, severe headache, insomnia; as new, slight facial paralysis, suspicion of oncoming progressive paralysis. V=5/10. Wassermann positive. January 6th, 1911, injection of salvarsan. Considerable pain and slight infiltration at the site of the injection. A week later general condition and eye better. Two weeks later V=5/6 to 1.

Result, prompt and good.

5. H. E., 28 years old, very strong man. Since January, 1910, treated elsewhere with large doses of mercury on account of a most severe parenchymatous keratitis. June 1st, 1910, both corneæ porcelain white, slight cyclitic injection. V=prompt light perception. Wassermann positive. Tuberculin test positive. Tuberculin treatment till August 1st without success. Jequiritol without success in November. January 6th, 1911, injection of salvarsan. Slight local and general reaction. Eyes at first unchanged. Two weeks later undoubted clearing up of the corneæ. Counts fingers closely.

Result: minute, but remarkable after uselessness of all other therapeutic measures.

Aside, from the remarkable success in the one case of sympathetic ophthalmia and in the few cases of my own we can deduce from the foregoing 470 cases if we do not judge altogether too sceptically (after 1 injection of salvarsan) that:

A. In affection of the lids there was prompt success in 100 per cent.

B. In affection of the conjunctiva prompt success in 63 per cent., none in 37 per cent.

C. In affection of the cornea, success in 28 per cent., none in 72 per cent.

D. In affection of the sclera, success in 80 per cent., none in 20 per cent.

E. In affections of the uveal tract, success in 63 per cent., none in 37 per cent.

F. In affections of the retina and opticus, success in 58 per cent., none in 42 per cent.

G. In affections of the muscles, success in 26 per cent., none in 74 per cent.

H. In affections of the orbita and neuralgia of the fifth, 100 per cent. successes.

This means in general in luetic eye affections 65 per cent. successes and 35 per cent failures. Plant's statistics in general syphilitic symptoms gives 77 per cent successes and 23 per cent. failures.

If we consider that in this series there are a number of eye affections which were only with difficulty or not at all influenced by former antisyphilic remedies (parenchymatous keratitis, paralysis of ocular muscles in tabes and paralysis, atrophy of the optic nerve), and that on the other hand the results are not always given with accuracy, but very optimistically, and that some cases have not yet been observed long enough to exclude possible relapses, we are forced to the conclusion that *the luetic eye affections react even less promptly to salvarsan than the other syphilitic manifestations.*

The following, however, speaks in favor of salvarsan: No clear case of blindness has thus far been observed after an injection of salvarsan and the enthusiasts insist upon its innocuousness whether a diseased or healthy eye is concerned.

From Igersheimer's toxicological and chemo-therapeutical studies it seems that the therapeutic doses of salvarsan as at present employed produce no organotropic or neurotropic effect on the eye.

On the other hand doubts have been raised as to the assumed absolute innocuousness of salvarsan for the eye by the frequent appearance of particular eye and ear affections belonging to the tertiary stage of lues which came on two or three months

later when all other luetic manifestations had long before disappeared.

Thus were observed: in 15 cases iritis; in 3 cases choroiditis; in 15 cases neuritis optica; in 8 cases paralysis of ocular muscles; in 9 cases ear affections which became manifest by tinnitus, deafness, vertigo and nystagmus.

The majority of the observers, among them Ehrlich, declare these affections simply as lues relapses in another place, just as they are found apparently often after mercurial treatment (especially with extra-genital infection) at an early stage (F. Becker gives neuritis optica in 6 per cent. of lues cases). Their opinion is supported especially by the fact that these affections yield as a rule promptly to a second injection of salvarsan, or to mercury. Moreover, it is maintained that nerves like the opticus, acusticus, and oculomotorius pass through narrow bony canals lined with unyielding connective tissue which seem to be the sites of special predilection of the spirochaetæ, which have escaped the "ictus therapeuticus."

Others explain these apparent relapses by the action of endotoxins or as the so-called Hersheimer reaction in which momentary swellings of the periosteum in these bony canals are said to influence the nerve mechanically.

Others, again, believe in a combination of lues manifestations and salvarsan influence, due particularly to disintegration of the salvarsan as may be due to poorly exhausted or cracked ampullæ, or which may take place where the remedy remains lodged in necrotic and gangrenous subcutaneous and muscular tissue.

The more sceptical authors consider these eye and ear affections as organotropic and neurotropic effects of salvarsan, that is as direct injuries due to the arsenium, because, contrary to previous observations, these manifestations appear with especial frequency in the early stage of syphilis and because they come on at a uniformly regular period from two to three months after the subcutaneous or intramuscular injection, at a time when most of the remedy has become absorbed. As proof C. Stern relates two cases of ocular paralysis in syphilophobes, in whom before and after the injection Wassermann was negative and in whom salvarsan had been injected (in these cases a luetic ætiology as well as a lues relapse could be excluded with great probability). These points are still debatable, but considering the not at all brilliant successes in syphilis of the eye and some

side effects, presently to be mentioned, oculists, in my opinion, should use salvarsan only,

1. When we want to try to act quickly whether in the rare ocular primary sores when as yet no swelling of the lymph glands announces the propagation of the virus and when Wassermann is still negative, or in secondary or tertiary symptoms as soon as a rapid loss of function seems imminent;

2. In cases which do not yield to mercury and iodid and which cannot bear these agents.

Aside from this we better first use our well tried and proven previous syphilis therapy.

The greatest scepsis we must permit to act in the ocular symptoms due to tabes and paralysis.

To be sure, undoubtedly critical and absolutely consciencious authors have reported cases in which neuralgic and lancinating pains, disturbances of swallowing and other subjective symptoms ceased or were improved for a prolonged time, also on a favorable influence on ataxias, gastric crises, disturbance of speech and of the bladder, paresis of the facial and oculomotor nerves, even on return of virility. Yet, we must not forget that these patients are essentially influenced by suggestion and that the result of these functional examinations is too much influenced by the subjective condition of the examiner. Whoever knows the difficulties of an exact examination of the pupil reaction, who knows how easily hippus, a paradoxical reaction or an accidental convergence may feign a light reaction, will find it wonderful when after a salvarsan injection a previously inactive pupil shows "a trace" of reaction. It is surely food for thought that a neurologist of the experience of an Oppenheim agrees that he had allowed himself to be cheated for weeks in repeated examinations of a tabetic who voluntarily simulated an apparently returned patellary reflex. We must moreover not forget that arsenobenzol, like all arsenium preparations, has a great roborating effect and may temporarily awake energies which previously had been lost.

We, therefore, best use salvarsan in tabes and paralysis only when with a positive Wassermann we must assume that there are still active luetic products aside from the irreparable degenerative processes (as for instance is the case with pseudotabes and pseudoparalysis), after having informed the patient as well as his family of the small chances of a mostly only temporary improvement, even of a not impossible deterioration and of some

possible side effects, and if in spite of this the injection of salvarsan is demanded.

II. The side effects must be divided into local and general ones.

It is still often repeated that salvarsan is innocuous and does not produce toxic side effects.

This is true in most cases; with a careful asepsis and good technique the subcutaneous and intra-muscular injection is followed for a few hours by a sensation of burning and pricking and a short absorption fever (at most 38.5°); usually at the place of injection a shell-like thickening and infiltration of at most the size of the palm is formed in the subcutis and the muscular tissue which, however, is moderately painful on pressure only and with moist compresses disappears in the course of from 2 to 6 weeks.

After an intravenous injection, too, when made lege artis and carefully, so that the intima of the vein is not injured, usually only a slight chill appears followed by a slight rise in temperature, perhaps some vomiting and diarrhœa; but after 24 to 48 hours things usually have returned to the norm.

Yet in a number of other cases things turn out differently. The swelling and infiltration at the site of infection sometimes grow to the size of a fist, so that it can be seen even when an overcoat is worn; it assumes a vehemently inflammatory character with severe intercostal neuralgias and sciatica, even sometimes with paralysis of the peronæus.

The infiltrated tissue (all parts of it, muscle, nerves, fat and subcutaneous tissue) becomes necrotic and finds a way out by the formation of a fistula and gangrenous sloughing of larger parts of the skin, or it must be removed by surgical means. Often only from 4 to 6 months later the process heals by scar formation and this has given to prostitutes and sickbenefit individuals a cause for a suit for damages. There are very rarely any infectious germs in this necrotic tissue (only secondarily), yet as a rule, even months after, considerable quantities of arsenium are found! Thus we have mostly to deal with aseptic coagulation necrosis.

After intravenous injections larger thromboses have in not a few cases been observed in the vein of the arm which was selected for the infusion; I myself have seen in a skin clinic such thromboses which reached into the arm pit; Renault reports on a phlegmone of the whole arm. Hausmann states that

even after intramuscular injection thromboses may be formed reaching into the vena iliaca and femoralis. It is needless to say in what danger of embolism the patients are until the thrombus is organized. In fact, cases of embolism of the lungs, embolic pleuritis and pneumonia can be found in literature.

Furthermore, following injections of salvarsan the following ocular side effects have been observed: pericorneal injection, cyclitic irritation, scintillations and scintillating scotoma, sudden amaurosis of a few minutes duration; temporary ptosis; increase of tension. Of general side effects have been noted: high and lasting fever, vomiting and diarrhœa, polyuria and anuria, colon and bladder tenesmus, albuminuria, even hæmorrhagic nephritis; diabetes and icterus; further on measle- and scarlatina-like as well as urticaria- and purpura-like exanthemata, angina-like exanthemata, herpes zoster; variations in the blood pressure, irregularities of the pulse, heart troubles which increased to dispnœa, angina pectoris with acute enlargement of the heart and causing serious collapse, and finally nervous affections as deliria, epileptiform and epileptic seizures, reflex disturbances, pareses of the muscles of the extremities, slight and more serious suppressions of function in cerebral lues and metasyphilitic affections, which had hitherto not been observed.

According to their more or less sceptic viewpoint the different authors judge differently as to whether these side effects which are rare and usually pass off more or less quickly are toxic effects, perhaps due to spoiled solutions or accidental flaws in the exhausted ampullæ, or whether they are due to an individual difference in hypersensitiveness in a syphilitic organism which is especially labile, or whether they are symptoms of shock. Convincing proofs do not exist either for the one or the other of these assumptions. At any rate it will be well not to forget these side effects before making the injection of salvarsan and to draw the attention of the patient or his family to the possibility of their occurrence.

Lasting damages from arsenobenzol have thus far not been observed. Of the about 43 cases of death having occurred a shorter or longer time after the salvarsan injection not one could with certainty be laid to a directly toxic effect of arsenobenzol.

In order to avoid these disagreeable side effects it will be necessary to precede the injection of salvarsan by a thorough general examination, especially of the lungs, kidneys, liver,

heart and central nervous system, to be most painstaking in the making of the preparation, to make sure of an absolute asepsis and faultless technique, and finally to consider well all contraindications.

III. The following contraindications have so far come to our knowledge:

1. Non-luetic affections of the optic nerve and retina.
2. Neuroses and organic troubles of the heart and affections of the bloodvessels.
3. Serious lung diseases, exclusive of tuberculosis.
4. Non-luetic nephritis and diabetes.
5. Serious visceral lues, ulcer of the stomach.
6. Pronounced degeneration of the central nervous system and alkoholism.
7. Severe congenital lues in the newly born.
8. Febrile diseases of various kinds.
9. The time of menstruation.
10. Senile degeneration, marasmus and non-luetic cachexia.

When paying attention to these contraindications salvarsan will undoubtedly, in spite of its disagreeable side effects, be of great service to the oculists as a symptomatic remedy in all cases in which we consider it indicated. Whether it is superior to mercury we cannot yet decide, since its action is still so little uniform.

What makes it preferable to mercury and iodid is

1. That when it acts it usually acts more promptly so that one salvarsan injection is about equal to two weeks of energetic mercurial treatment:
2. That in consequence the time in the hospital is shortened and the danger of the spreading of syphilis is diminished;
3. That contrary to mercury it may be employed in tuberculous luetic patients and when a slight nephritis is present.

IV. I can quickly pass over the most appropriate manner of its employment, since every salvarsan ampulla is accompanied by rules given by Ehrlich, to which we must at present adhere in order to save ourselves.

I just want to give a few practical hints which I have found to be useful:

1. When first making the solution for an intravenous injection this must be very thoroughly and for a long time shaken in the measuring glass with the glass beads (at least for 5 minutes), otherwise a thin layer of the preparation which becomes gela-

tinous at the first shaking remains attached to the beads and comes off in shreds and membranes after the soda and salt solution have been added. Later on these particles no longer become dissolved and thus the murky fluid is unfit for an intravascular injection. By filtration through sterile filter paper the solution can be made clear, but in this way an indefinite portion of the preparation is removed and an exact dosage no longer possible.

2. The ordinary Strauss needles are not good for intravenous injections, since if held ever so quietly they must wound the intima of the vein and thus favor thrombus formation. Much better are the trocar-like needles of Mirowski, the unpointed tubule of which remains lying in the vein (can be bought at Neumann's at Koeln).

3. In order to prevent thrombus formation it is best to introduce at first and after the injection some pure physiological salt solution; in this manner one may, also, find out whether the canula lies properly and whether the injection can be made without a hitch before the caustic action of salvarsan has begun, and finally the wound canal is thus made clean of remnants of salvarsan.

4. Just as for the prevention of thrombosis in intravenous injections, it is best in order to prevent inflammatory infiltration in subcutaneous and intramuscular injections to first introduce the sterile canula without filling the syringe and to remove the syringe in order to make sure that the needle has not entered a bloodvessel (if this has happened blood will flow out of the canula); then only the syringe is filled with the preparation for injection, attached to the needle and the injection made very slowly. After this the syringe is removed and filled with some sterile liquid paraffin with which the wound canal is freed from remnants of the preparation retained within it. It seems that the inflammatory infiltration starts always from the burnt wound canal. Whether the canula lies really subcutaneously and not intracutaneously is recognized by the ease with which it can be moved about without causing a dragging or folding of the surface of the skin. In the same manner when making an intramuscular injection the ease with which the canula can be moved about and the slow injection be made without much pressure proves that it really lies in the muscular tissue and not in a thicker fascia or, perhaps, in the periosteum (which must have

happened sometimes, because an infiltration reaching into the small pelvis cannot be explained in any other way).

5. After an injection of salvarsan the patient should be kept in the hospital at least a week; after this a daily ambulatory examination should be made for another week on account of late reactions.

6. It is best to make the injection in the morning, in order not to overlook the oncoming of side effects, which otherwise might happen during the night.

7. Ehrlich leaves it to the taste of each individual whether to use salvarsan subcutaneously, intramuscularly or intravenously, also, whether it is to be used in a watery or oily solution. The action—even the side effects—seems to be much the same under any form of employment.

The intravenous injection acts quicker, but less persistently since the arsenium is secreted out again in three or four days. The surest method appears to be that of Ivers who injects half of the dosis intravenously and the other half 3 or 4 days later intramuscularly.

For the not infrequent relapses repeated injections of smaller doses or the combination of salvarsan with mercury seem to give good results.

ON THE OCULO-MOTOR TYPE OF POLIO-ENCEPHALITIS.

Sidney Stephenson (*The Ophthalmoscope,* March, 1911), discussing this subject, suggests the following conclusions:

1. There is a particular form of paralytic strabismus in children which is due to polio-encephalitis.

2. It is not uncommon, and is most frequent in children under one year of age.

3. It is associated comparatively seldom with other symptoms indicative of a cerebral disorder.

4. Zymotic diseases appear to be important factors in its causation.

5. Although the paralysis may affect any of the muscles of the eyeball, yet in three-fourths of the cases the external rectus muscle is alone involved. The intrinsic musculature of the eye is seldom attacked.

6. The common form of encephalitic strabismus is very apt to be confused with the ordinary form of concommitant convergent strabismus.

INHERITED SYPHILIS AND BLUE SCLEROTICS.*

By J. D. Rolleston, M.D.,
Assistant Medical Officer, Grove Fever Hospital,
LONDON, ENGLAND.

A male infant, aged 5 months, an only child, was admitted to the Grove Hospital for nasal diphtheria on November the 15th, 1910. The father had contracted syphilis about six years previously, and had undergone only a few months' treatment. Six months after marriage and one year before the baby's birth the mother developed "a poisoned lip," probably a hard chancre, of which the scar is still visible in the centre of the lower lip. Its real nature does not seem to have been recognized, as she received only local treatment on seeking advice at a hospital.

When three weeks old the baby lost all power in his left arm, but recovered the use of the limb in the course of a month without specific treatment, and when six weeks old had "thrush at both ends," which was probably mucous tubercles in the mouth and round the anus.

Condition on admission.—Atrophic, fair-haired infant, weight 8 lb. 7 oz., constantly crying. Marked prominence of scalp veins, bulging forehead, umbilical and right inguinal hernia. Crusts in right nostril from which diphtheria bacilli were cultivated. No eruption. Spleen and liver not enlarged. Heart normal.

Both sclerotics show a uniform pale blue coloration; irides grey, embryontoxon at the margin of each cornea.

During the child's stay in hospital the blue coloration of the sclerotics was more obvious on some days than on others.

The mother, aged 27 years, a woman of fair complexion, presented an almost identical condition of the sclerotics, but the coloration was somewhat deeper, more nearly approaching a leaden hue.

An arcus senilis was present in each eye. Beyond occasional smarting on exposure to wind and lacrimation following prolonged accommodation, her eyes had not caused her any trouble. She stated that her sister, a fair-haired girl, aged 16 years, presented the same condition, as did also their grandmother, now dead. Their two brothers, aged 37 and 22 years respectively, were not affected.

*Case shown at the Royal Society of Medicine (Section for the study of Disease in Children) on March the 24th, 1911.

The child's nasal diphtheria cleared up under 4,000 units of antitoxin, but diphtheria bacilli persisted in the nose until February, 1911. Four days after admission periostitis of the upper end of the left ulna developed, but subsided in a few days after administration of hydrarg. c. creta gr. ½ *bis die*. Beyond some erosions round the anus and paronychia of the right ring finger nothing further of note occurred until January the 12th, 1911, when the left arm was found to present the flail-like attitude characteristic of Parrot's syphilitic pseudo-paralysis. On palpation the arm was found to be excessively tender, and definite crepitus was felt at the junction of the upper and middle third of the humerus. The temperature was 101°F. for two days, and then became normal.

The limb was put up for a fortnight in a cardboard splint, and the mercury, which two days before the fracture had been reduced to gr. ¼ *bis die* owing to loose stools, was increased on January the 21st to gr. ½ *b.d.* and on February the 4th to gr. ½ *ter die*. On January the 28th when the splint was removed there was good union, and well-marked callus was felt. Active and passive movements were free. Subsequent recovery was uneventful, and the child was discharged in good health on March the 9th, 1911.

The principal features of interest in the case are the extragenital infection of the mother, the spontaneous fracture of the humerus in the child, and the condition of blue sclerotics in three generations. Although no Wassermann's reaction was performed, the history of the case and the position of the scar made it practically certain that the lesion on the lip had been a chancre.

Spontaneous fractures, or, to use Broca's more accurate term, "pathological fractures," are comparatively uncommon in syphilis, especially fractures of the shaft as distinct from separation of the epiphyses, and still more exceptional is it for the fracture to be limited to a single bone instead of the lesions being multiple, as in most of the recorded cases. This was probably due to the adoption of specific treatment, as shortly after admission, before mercury had been given, the child developed periostitis of the ulna, thus indicating that the osseous system showed a special tendency to be involved.

The symptom of persistent crying, to which attention has recently been drawn by Comby and Sisto as a phenomenon of inherited syphilis, was probably due to pains in the bones.

The occurrence of the fracture during mercurial treatment

was probably due to the doses being too small, as rapid recovery ensued on increase of the dose.

The case is illustrative of the favorable course of pathological fractures in inherited syphilis, provided suitable treatment is adopted. All authorities now hold this view, but Parrot, who first described syphilitic pseudo-paralysis, regarded it as a very unfavorable sign as all his cases died.

If the history could be trusted the same arm had already been affected when the child was three weeks old, and recovery had taken place without specific treatment. A similar case of spontaneous recovery from syphilitic pseudo-paralysis has been recorded by Cadet de Gassicourt, and Gouez has collected five other cases in which improvement occurred before mercury was administered.

It should be noted that the humerus is the most frequent site of pathological fractures in syphilis, as it was affected in twenty-two out of sixty-four such cases collected by Frangenheim.

The condition of blue sclerotics as a congenital disease was first described by von Ammon in 1841 in the following terms: "Congenital diseases of the sclerotic are rare. . . . Of importance is a peculiar whitish-blue coloration of this membrane occasionally met with, when the whole development of the eye is retarded. The sclerotic in such cases appears thin and almost transparent. I have seen it also in congenital hydrophthalmos. . . . . Similar thinness occurs in patients suffering from congenital heart disease. In that case the sclerotic is dark blue, this being due partly to the thin condition of the membrane and partly to an accumulation of venous blood and a large mass of pigment in the eye."

Von Ammon's description is accompanied by two illustrations (Tab. xv, figs. 2 and 3), the first representing the blue coloration in a case of congenital hydrophthalmos, and the second in a case of congenital morbus cordis.

After von Ammon little notice seems to have been taken of the anomaly until 1903, when Dr. Leslie Buchanan, of Glasgow, described a case in a girl, aged 9 years, whose left eye he examined after excision for an injury. He found that the cornea and sclerotic were unusually thin, the cornea being three-fifths and the sclerotic one-third of its normal thickness. Histological examination showed that the fibres of the cornea and sclerotic were of about normal size but unusually few in number. The anterior elastic lamina was entirely absent.

In a paper entitled "A Congenital Anomaly of the Sclera: Pseudo-coloboma," to which Mr. Sydney Stephenson has kindly drawn my attention, Dr. Percival J. Hay, of Sheffield, in 1907, described a condition resembling that under discussion, but differing from it in that the thinning of the sclerotics, instead of being uniform and symmetrical, was in the right eye represented by a triangular area on either side of the cornea, and on the left confined to an area on the temporal side only. The case occurred in a still-born child, the subject of many other congenital deformities. There was no family history. It was not till 1908 that the hereditary transmission of blue sclerotics was first mentioned. In that year A. Peters, of Rostock, recorded cases in four generations. Four of his patients showed a typical embryontoxon. Peters regarded the condition as due to an abnormally thin or abnormally transparent sclerotic. In 1910 Mr. Sydney Stephenson described the condition affecting twenty-one out of thirty-two members belonging to four generations of one family. In his cases, as in mine, the inheritance was through the females, and the complexion in general was fair. In two cases the presence of an arcus senilis or an embryontoxon was noted. Subsequent investigation enabled Mr. Bishop Harman to add another generation to this family, so that a total of fifty-five members was reached, of whom thirty-one showed the same congenital peculiarity with individual differences.

It did not occur to me that there was any connection between the pathological fracture of the child's humerus and its blue sclerotics until, while looking up the literature on abnormalities of the sclerotic in the Surgeon-General's Index Catalogue I came across a paper by Dr. Eddowes, entitled "Dark Sclerotics and Fragilitas Ossium," where he described some cases running in families in which the two conditions were associated. Dr. Eddowes suggested that the transparency of the sclerotics indicated a want of quantity or quality in the fibrous tissue forming the framework of the various organs of the body, which therefore accounted for the want of spring and toughness in the bones. Dr. Eddowes has kindly informed me that he never even suspected inherited syphilis in his cases.

Possibly the deficiency of fibrous tissue in the present case as manifested by the blue coloration of the sclerotics may have been a contributing factor together with syphilis in the production of the fracture. There was, however, no history of fragilitas

ossium in any other member of the family.—*British Journal of Children's Diseases.*

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ON A CASE OF ELASTOMA OF THE BULBAR CONJUNCTIVA.

By Adolf Alt, M.D.
ST. LOUIS.

On February 23d, 1911, Miss K. M., 46 years old, a cook, came to consult me in regard to a growth on the temporal side of her left eye. She said she had noticed it growing for about two years and had been told it was a cancer.

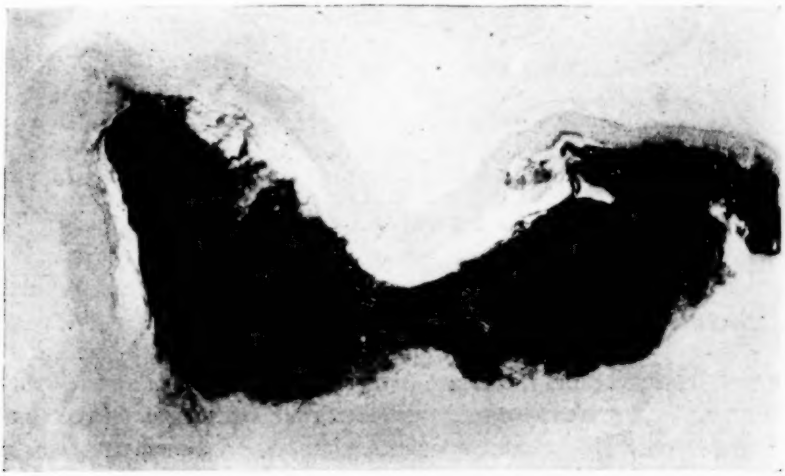
I found a lobulated whitish, pearly looking, small tumor situated about three millimeters from the temporal side of the cornea in the bulbar conjunctiva. This tumor was five millimeters long and about one and a half millimeters wide. Its long axis was at right angles to the horizontal meridian. There was a slight amount of injection in the conjunctiva surrounding it. The patient complained of a painful sensation which never left this eye. The little tumor was slightly moveable with the conjunctiva.

The growth did not have the yellowish appearance of a pinguecula. Its form and its peculiar shape, with the long axis vertical, distinguished it materially from the usual appearance of a pinguecula. It was, also, situated farther from the corneal periphery than a pinguecula usually is found to be.

From these observations I was not at all disinclined to believe

that I had probably to deal with an epithelioma of the conjunctiva. I proposed the immediate removal of the little tumor, but the patient refused this, in the hope that some local application might cure it.

Three weeks later the patient returned saying that the tumor had grown some since I saw it, and asked me to remove it. After I had removed the little tumor which, as far as I could judge, had in the interval not changed in shape and size, I cauterized the wound thoroughly. The reaction was somewhat severe but subsided after a few days and then the wound healed



smoothly. No recurrence, or sign of one, is noticeable at present, nor do I expect any from the histology of the tumor.

On section no epithelioma was found, but a fibrous tissue made up the whole tumor which was covered by the somewhat thickened conjunctival epithelium. On staining with orcein the whole tumor was found to consist of elastic fibres (see figure), no other tissue entering into its make-up. It is purely and simply an elastoma.

MEDICAL SOCIETIES.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, May 4th, 1911.

Mr. Gustavus Hartridge in the Chair.

CARD SPECIMENS.

Mr. Tomlinson showed a model giving a curious color effect due to simultaneous contrast. Two patches of dissimilar color were viewed by separate eyes through translucent open-ended tubes colored like the patches; the patches appeared to be of a similar neutral tint.

Mr. Levy showed a case of persistent pupillary membrane.

Mr. Roll, a case of hole close to the macula. There was no history of injury and the defect was thought to be congenital. V.=6/12.

Mr. Dorrell showed members of a family affected by discoid cataract. The mother and 4 of her 7 living children had the cataract, 7 others were dead. Mr. Nettleship remarked on the density of the disc which in one case amounted almost to a small lamellar cataract.

Mr. Greves showed a case of albuminuric retinitis of an ordinary type in the left eye, but atypical in the right. Mr. Parsons thought the absence of change in the right eye was due to subsidence of an earlier retinitis.

PAPERS.

Mr. Nettleship read a paper on Hereditary Nystagmus based on four new pedigrees and nine published ones. The thirteen were divisible into two groups:

1. Nystagmus associated with head movement, with affection of males and females and continuous inheritance of the defect.

2. Nystagmus with no head movement, with affection of males only (there were certain doubtful exceptions) and inheritance through the unaffected females. The inheritance in these cases was simlar to that recognized for color blindness and hæmophilia.

In the first group the nystagmus was horizontal; it varied greatly in rapidity and extent. The head movement tended to diminish with age.

In both groups the affected had poor vision and marked ametropia, usually hypermetropic astigmatism, many had albinotic characteristics. There was no evidence of general nerve disease, and no consanguinity.

Mr. Herbert gave an interim report of the small Flap Sclerotomy for Glaucoma. He had performed 54 operations, 41 by cutting the scleral flap with the narrow knife, and 13 with Bishop Harman's twin scissors.

Of the 54 operations only 3 had failed; one from acute glaucoma in a blind eye due to prolapse of the iris and adhesion, two in secondary glaucoma from cyclitis; these failures were in blind or partially blind eyes. In two other blind painful eyes success was partial; tension was only moderately relieved, but pain was stopped.

The cases operated with the twin scissors had been done in the last six months, and it was too early to judge of the final result. *A priori* the scissor cuts should be more effective, but he thought the reflection of the conjunctiva tended to tie down the free end of the flap so that conjunctival œdema appeared to be less.

Mr. Tomlinson showed the visual fields of a man, æt. 22, before and after operation by Herbert for chronic glaucoma, in which there was a decided improvement.

Mr. Treacher Collins said he had operated on 40 eyes with the knife. The large majority were perfectly satisfactory. In 2 there was prolapse of iris, in a few slight irido-dyalisis, and in some obvious adhesion of the iris to the wound.

The operation was little more than a paracentesis, yet it was much more successful. He suggested the filtration scar was a permanent gap lined with epithelium derived from the cells within the spaces of the substantia propria of the cornea.

Mr. Mayou had performed 15 operations. Two failed, one chronic glaucoma became acute and a subsequent iridectomy failed; on another he performed the operation twice and no relief was obtained.

Mr. Laws had performed the operation 45 times; there had been no failure to relieve tension permanently and satisfactorily. He knew of no other operation for glaucoma which could give such results. The essential feature of the operation upon which

its success depended was the lateral cuts of the flap. The flap need not be long, the short flap was quite effective and much easier to make. Besides he had operated on four eyes for buphthalmos; three were satisfactory, the fourth only partially because of intra-ocular hæmorrhage.

Mr. Ridley had done the operation 22 times, in every case tension was relieved, in one there was a temporary return of pain. In one case where V=p.l. before operation V=6/18 after operation. In four cases he had done Holth's operation on one eye, and Herbert's on the other; he considered the latter the better. N. Bishop Harman.

ABSTRACTS FROM MEDICAL LITERATURE

By J. F. Shoemaker, M.D.,

St. Louis, Mo.

A CASE OF VARIX OR ANGIOMA VENOSUM OF THE ORBIT.

J. F. Klinedinst (*Penn. Med. Jr.*, March 1911) reports a case of angioma of the orbit cured by injections of alcohol. The condition occurred in a laboring man, 31 years of age, who had noticed it for about five years. While he was sitting or standing upright nothing could be observed, but on stooping over or in lying on his right side the outer half of the right lower eyelid protruded forward about half an inch. When continuing in the stooping position, as at work, there was a sensation of fulness and dull pain. Five treatments by electrolysis not having caused any improvement the author conceived the idea of injecting alcohol with a hypodermic needle, believing that the inflammation thus set up in the veins would tend to obliterate them. He accordingly began by injecting three drops of alcohol, plunging the needle through the conjunctiva, close to the floor of the orbit under the vascular tumor, to the depth of half an inch. There was some pain which soon subsided but no apparent reaction. At the end of a week the swelling was not so great when the patient stooped forward. A second injection of five drops of alcohol was given in the same manner. There was some pain, and swelling of the tumor resulted from this which, however, disappeared in a day's time. A week later the

tumor was smaller and did not bulge so much. A third injection of six drops was given. This produced quite severe pain and great swelling of the whole lower lid. Under the use of cold applications this disappeared the next day, although there was considerable soreness in the orbit for several days. One week later no evidence of the tumor could be found, no matter what position the patient assumed. A fourth injection of five drops was given, to make the cure more complete and, although a year has passed since, there has been no sign of the tumor. The author believes this to be the first instance in which a vascular tumor of the orbit has been cured by the use of injections of alcohol, as also the first use of alcohol by injection into the orbit. He considers it the best method of treating these cases. The injections should be made around the tumor rather than into it to avoid puncturing the blood vessels. However, should the alcohol be injected into a vein it forms an albuminous clot which is soluble in the blood current.

CASE OF CHOKED DISK AND PROGRESSIVE BLINDNESS DUE TO SARCOMA OF THE BRAIN.

Jerome B. Thomas (*Jr. A. M. A.*, May 13, 1911) reports a case of choked disk due to sarcoma of the brain, resulting in blindness and death, and notes the following facts:

1. The tumor was precentral and the accompanying optic neuritis was very severe. Paton concludes that precentral tumors are nearly always associated with a fairly severe neuritis, whereas postcentral tumors are nearly always associated with moderate neuritis. It is unnecessary to remind the oculist that the severity of the optic neuritis should be judged not so much by the loss of vision as by the height of the swelling of the disk, turgescence of the retinal vessels, the extent of hæmorrhages and patches of exudate.

2. The eye on the opposite side of the tumor was first affected.

3. The difference in severity of the optic neuritis in the two eyes could not be noted because the process in the right eye had begun the atrophic stage and in the left eye was at the height of the acute stage when the patient first came under observation. Both the second and third signs as noted above are untrustworthy, according to Paton. In about one-half of his cases a difference in the severity of the neuritis in the two eyes was observed, but the more severe neuritis often occurred on the opposite side from the tumor.

ON THE RELATION OF THE MENINGOCOCCUS INTRACELLULARIS TO PSEUDO-GLIOMA.

George Coats and J. Graham Forbes (*The Ophthalmoscope*, May, 1911) report four cases of metastatic ophthalmitis in which the meningococcus was found. They summarize their findings as follows:

We have found the meningococcus in four cases of metastatic ophthalmitis of pseudo-gliomatous type, and are led to believe that a specific causal relation may be established between this organism and pseudo-glioma. Apart from our own observations, we base this opinion on the following considerations:

(a) Pseudo-glioma is a well defined clinical entity, and is therefore not unlikely to be due always to the same organism.

(b) A form of ophthalmitis identical with pseudo-glioma occurs in from 4 per cent. to 5 per cent. of cases of epidemic cerebro-spinal meningitis; the meningococcus has been recovered from the eye in such cases. Pseudo-glioma and cerebro-spinal meningitis are both diseases of childhood and both are sometimes associated with arthritis.

(c) In idiopathic pseudo-glioma a history of head symptoms, probably due to meningitis, is very frequent; two of our cases prove that even when the history is not of head symptoms, but of measles, the pseudo-glioma may still be due to the meningococcus.

ARTERIAL HYPERTENSION AND ITS RELATION TO MORBID CHANGES IN THE EYE.

Luther C. Peter (*Penn. Med. Jr.*, March, 1911) says that arterial hypertension is a symptom of great importance and that it is a premonitory sign of chronic interstitial nephritis and general arteriosclerosis. It is greatly increased after these diseases are well established and is responsible for different pathological conditions of the eye for which other causes are frequently erroneously assigned. While admitting that the results obtained by the average modern bloodpressure instruments and methods are inaccurate, still he contends that the variations in the pressure of the blood stream can be much more accurately judged by the use of these than by the palpating finger only.

A study of 104 cases confirms him in the opinion expressed in a previous article that retinal œdema and neuroretinitis are more frequently observed than the classic "albuminuric retinitis"

and that there is a direct relation between the height of the tension and the severity of the symptoms observed. He says:

"Corroborative evidence may be found, first in the morbid anatomy, which may be briefly summed up as a thickening of the media, œdema, extravasation, hæmorrhage and fatty degeneration; second, in the fact that eye changes are rare in the early history of parenchymatous nephritis and blood-pressure is also low until the large white kidney gives place to the secondary contracted kidney, when blood pressure is much increased and eye symptoms appear as in the case of primary contracted kidney; and, third, in a comparative study of the same phenomenon when it occurs in intracranial disease. The neuroretinitis of nephritis and that of intracranial origin are so nearly alike as to be differentiated only by a careful study of the history of the case, its symptoms and urinalysis."

Peters has several times had patients with early retinal disturbances and increased blood pressure, 150 to 170 millimeters, in young adults, where, although careful examinations were regularly made, casts and albumin were found first more than a year after the retinal disease first was observed. Such cases seem to confirm the belief that increased blood pressure is a very early premonitory sign of arteriosclerosis and chronic interstitial nephritis, possibly acting as a caustive factor and also that arterial hypertension is the cause of early retinal and arterial changes as well as of the later phenomena.

For the purpose of comparison the author has tabulated his cases and has included nine cases of syphilitic neuroretinitis and three cases of chronic parenchymatous nephritis. The average blood pressure in the nine cases of syphilitic neuroretinitis was 132 mm. of mercury; in the three cases of chronic parenchymatous nephritis it was 132 mm.; in twenty cases of retinitis having chronic interstitial nephritis it was 165 mm.; in fifty-nine cases of neuroretinitis having chronic interstitial nephritis it was 185 mm.; in three cases of albuminuric retinitis it was 190 mm.; in six cases of hæmorrhagic retinitis it was 205 mm.; and in three cases of papillitis, it was 225 mm. He draws the following conclusions from his study:

1. Arterial hypertension is the chief cause of the eye-ground phenomena observed in chronic interstitial nephritis and arteriosclerosis.

2. Similar vascular changes, associated with high blood press-

ure, may be observed at times, before these diseases are diagnosed by the other clinical symptoms.

3. It frequently acts as a cause for sub-conjunctival hæmorrhage and is so closely associated with glaucoma that it should be regarded as an active factor in the development of this disease.

4. It probably will help to explain the phenomena of intraocular hæmorrhage after cataract extraction.

5. In order to prevent and to treat rationally the more serious eye conditions, routine blood-pressure studies should be made in all cases of intraocular disease not traumatic in origin.

VERNAL CONJUNCTIVITIS AND EOSINOPHIL CELLS.

Brown Pusey (*Jr. A. M. A.*, April 1, 1911) refers to Herbert's discovery, in 1903, that the conjunctival secretion in vernal catarrh is rich in eosinophil polymorphonuclear leukocytes and thinks that the importance of this discovery is not recognized. During the spring and summer of 1910 Pusey examined smears stained with Giemsa taken from all patients suffering with conjunctivitis in his clinic and private practice. All the ordinary forms of conjunctivitis were included in his series of cases, and the smears from those cases of known cause showed very few if any eosinophil cells while in those of unknown cause and no bacterial finding he was surprised to find in a number of them secretions that had numerous eosinophil cells. Upon closer examination of these cases clinically he found that they agreed in very many ways with the descriptions of vernal catarrh given in standard text-books. He found thirteen cases having many eosinophil cells in the conjunctival secretion and many symptoms of vernal catarrh, but in only three of these cases would the diagnosis of vernal catarrh have been made from clinical appearances, as ten of the thirteen cases did not present broad and flattened papillæ on the conjunctiva of the tarsus or the growths from the conjunctiva near the limbus of the cornea which are given by most authorities as characteristic signs of vernal catarrh. Pusey believes that these papillæ are absent in many cases, judging from his findings in the majority of cases, and that the proper diagnosis is often not made because clinicians have diagnosed this disease only, as a rule, when these papillæ were present. He quotes Fuchs, who says in a foot-note in his text-book: The papillæ are often small or altogether absent, so that the bluish-white veil, which covers the conjunctiva of the tarsus, is the only evidence of the disease.

OCULAR DISTURBANCES IN PREGNANT WOMEN.

Weil and Wilhelm (*Obstétrique,* Paris, March, 1911) compare the visual disturbances liable with retention of chlorids, the dropsical form, and with retention of urea, the dry form. In the first type the visual disturbances are an amaurosis of sudden onset, which promptly subsides when elimination of the chlorids is once more under way; the ophthalmoscope shows nothing or merely a venous congestion around the papilla which disappears without leaving a trace. On the other hand, the distinguishing feature of the eye disturbances with retention of urea is the so-called albuminuric retinitis, the gravity of which is explained by the coincident uraemia or azotaemia. Even with severe symptoms of this kind, emptying the uterus generally causes their complete retrogression. In a typical case reported the patient was at the seventh month of her first pregnancy. She had had primary chronic nephritis as a child, and during the pregnancy the clinical picture of severe azotaemia gradually developed, with apathy, anorexia, pruritus, albuminuric retinitis and convulsions, with almost total amaurosis, while the cerebrospinal fluid contained 2.67 gm. of urea. Delivery was induced and the copious diuresis which followed seemed to wash out the retained nitrogenous bodies and the patient rapidly recovered. Sudden transient amaurosis was observed in two other cases reported, evidently due to chloridaemia and subsiding at once after spontaneous delivery. One of these patients had had eighteen, the other three eclamptic convulsions. Venesection was done in both cases. There were no convulsions after delivery.—*Jr. A. M. A.*

REPORT OF A CASE OF DIABETIC GLAUCOMA AND OPERATION.

Samuel Moskowitz (*N. Y. Med. Jr.,* April 1, 1911) reports a case of glaucoma in a man, sixty-four years of age, suffering with diabetes. He emphasizes the fact that the diabetes was responsible for the glaucoma and not simply incidental with it. At the patient's first visit the author found—"Right eye: vision, perception of light only; tension, plus two; anterior chamber very shallow; iris reacted sluggishly to light and accommodation; eye bulging, conjunctiva almost anæsthetized and very much injected; the ciliary injection being especially marked; cornea very hazy, and difficult to see through into the fundus,

which showed mark cupping of the optic disc and venous stasis. Left eye: vision, fingers at one foot; tension, plus one; anterior chamber very shallow; cornea, clear; iris reacted sluggishly; fundus did not show cupping of the optic disc, or anything to suggest so marked a diminution in vision, except myopia."

With —2 D.S. the vision of the left eye was improved to 20/200 plus. Examination of the urine showed a trace of albumin and 2.2 per cent. sugar. No diacetic acid or acetone. After several weeks dietetic treatment of the diabetes together with the local use of .5 per cent. solution of eserin in both eyes the vision of the left eye improved to 20/80 with —2. D.S. A broad iridectomy was done in the left eye and five days later in the right. The wounds healed nicely in both eyes and about four weeks later the vision of the left eye with —2. D.S. was 20/30 minus two letters, while in the right eye, although the vision had not improved, the conjunctival and ciliary injection was much less and the cornea was clear. The patient left the hospital and being careless and indiscreet in his diet, he returned in three weeks with 2 per cent. sugar in the urine and increased tension in both eyes. His vision in the left eye had fallen to 20/70 with —2. D.S. With strict care as to his diet the vision soon became better than before and the tension diminished. The author calls attention to the occurrence of glaucoma in myopic eyes, the patient having always been somewhat "near sighted" and the further fact that the wounds produced on the eyeballs in doing the iridectomies healed well and quickly.

NOTICE.